Climate Risk Screening Tools: A Guide to the Guidance

Trærup, Sara Lærke Meltofte; Olhoff, Anne

Publication date:
2011

Document Version
Publisher's PDF, also known as Version of record

Climate Risk Screening Tools and their Application

A guide to the guidance

CC DARE: Climate Change and Development – Adapting by REducing Vulnerability

Acknowledgments

Climate Risk Screening Tools and their Application guidelines were authored by
Sara Trærup and Anne Olhoff of UNEP Risoe Centre on September 2011

The Ministry of Foreign Affairs of Denmark provided the funds for this project.

The opinions expressed here are those of the authors and do not necessarily present those of their institutions or the funding agency.

Table of Contents

1. Introduction

Climate risk screening is an integral part of efforts to ascertain current and future vulnerabilities and risks related to climate change. It is a prerequisite for identifying and designing adaptation measures, and an important element in the process of integrating, or mainstreaming, climate change adaptation into development project, planning and policy processes.

Over the past decade, a growing number of climate risk screening and assessment tools and methods have become available and are increasingly being tested on the ground. So far, the development and application of these tools and methods has mainly been driven by international donor agencies and NGOs. Developing country stakeholders have in several cases been directly involved as part of screening and assessment teams, and a number of capacity building activities (e.g. training of trainers) have been undertaken by international donors and NGOs to enable national stakeholders to carry out climate risk screening and assessment efforts using specific tools. In addition, the application of the various tools typically involves consultations with national universities and/or meteorological departments as well as local, district and/or national government. Typically, however, the process has been steered by international donor agencies and NGOs. Among the exceptions are the climate screening and assessment efforts carried out under the Climate Change and Development – Adapting by Reducing Vulnerability (CC DARE) country projects.

There is an increasing demand and attention among national stakeholders in developing countries to take into account potential implications of climate variability and change for planning and prioritizing of development strategies and activities. Subsequently, there is a need for user friendly guidance on climate risk screening tools and their potentials for application that targets developing country stakeholders. This need is amplified by the sheer volume of climate change mainstreaming guidance documents and risk screening and assessment tools available and currently under development.

Against this background, this paper sets out to provide potential users in developing countries, including project and programme developers and managers, with an informational entry point to climate risk screening tools. The emphasis in this report is on providing:

- An overview of available climate risk screening and assessment tools

along with indications of the tools available and relevant for specific purposes and contexts (Section 3)

- Examples of application of climate risk screening and assessment tools along with links to further information (Section 4)

Before turning to the respective sections on available climate risk screening tools and examples of their application, a delimitation of the tools included in this paper is included in Section 2. This section also provides a brief overview of how climate screening and related tools fit into decision making steps at various planning and decision making levels in conjunction with an outline of overall considerations to make when choosing a tool. The paper is rounded off with a discussion of lessons emerging from the application of climate risk screening and assessment tools in Section 5.

Two annexes are included for further support. Annex A provides summaries of the climate risk screening and assessment tools included in the paper. Links to additional resources on climate risk screening and assessment as well as to examples of climate adaptation checklists are available in Annex B.

2. Getting Started

Tools: Terminology and demarcation in the paper

The term 'tool' is used very broadly in relation to climate risk screening and assessment and may cover one or multiple steps of the screening and assessment process. To illustrate, the terminology encompasses:

- Structuring checklists
- Document based risk screening and assessment tools
- Computer based risk screening and assessment tools
- Data and information tools, including model tools for climate downscaling and socioeconomic scenarios or for analysis of climate data and implications of the outcomes of various climate modelling exercises
- Knowledge sharing platforms, mainly through websites

We do not provide a complete inventory of all the available types of tools in what follows. In this way, we leave out data and informational tools as well as knowledge sharing tools and platforms. Links to the latter are, however, included in Annex B. Equally, we do not include generic mainstreaming frameworks and guidance, although some of the toolkits and checklists included in the paper originate from generic mainstreaming frameworks and guidance. As indicated in Box 1, comprehensive inventories and stock-takes that include mainstreaming frameworks are available elsewhere and the reader is referred to these and other sources for further details.

Instead, we focus on key available process oriented risk screening and assessment tools (bullets 1-3 above) that can support climate change adaptation awareness raising and decision making in the broader context of development and that are readily operational.

Box 1. Examples of existing inventories and stock-takes

Compendium on methods and tools to evaluate impacts of, and vulnerability and adaptation to, climate change (UNFCCC, 2008): Provides a comprehensive inventory and summary of three broad categories of frameworks, methods, and tools: 1) Complete frameworks, i.e. methods that prescribe an entire process for the assessment of vulnerability and adaptation, some including toolkits to support this process. 2) Tools to address key cross-cutting themes or whose application spans multiple steps of the assessment process. 3) Sector specific tools and methods.

Screening Tools and Guidelines to Support the Mainstreaming of Climate Change Adaptation into Development Assistance – A Stocktaking Report (Olhoff & Schaer, 2010): Explores the rationale for and components of mainstreaming and provides an overview of existing tools and good practices to guide development practitioners in their climate change adaptation mainstreaming efforts. The report discusses and illustrates key climate change adaptation and mainstreaming concepts and their relation to development; explores climate risk screening efforts; and provides a comparative analysis of climate risk screening tools.

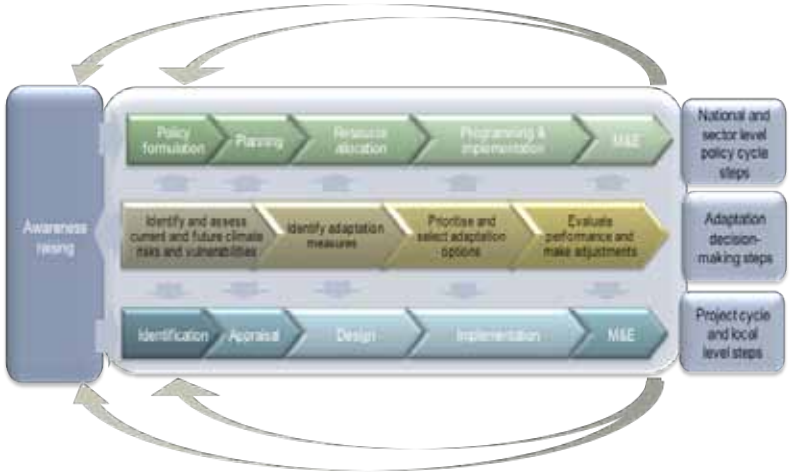
International Workshop on Mainstreaming Adaptation to Climate Change Guidance and Tools (GTZ, 2009): This workshop report includes a SWOT analysis of climate mainstreaming tools and summaries of main tools are available in an Annex.

Sharing Climate Adaptation Tools: Improving decision-making for development (IISD, WB, & IDS, 2007). This workshop report provides brief summaries of climate adaptation tools presented at a joint IISD, WB and IDS workshop in Geneva in 2007.

Linking policy, local and project level decision making steps to adaptation decision making

Climate risk screening and assessment may take place at various levels including global, regional, national, sectoral, district, local and project level. In this paper, we confine ourselves to the national and sub-national levels. Figure 1 below illustrates the decision making steps in national, sectoral, local and project cycles, as well as how decision making steps for adaptation are linked to and may feed into or be integrated in these policy and project cycle steps.

Figure 1 Linking policy, local and project cycle decision making steps to adaptation decision making steps

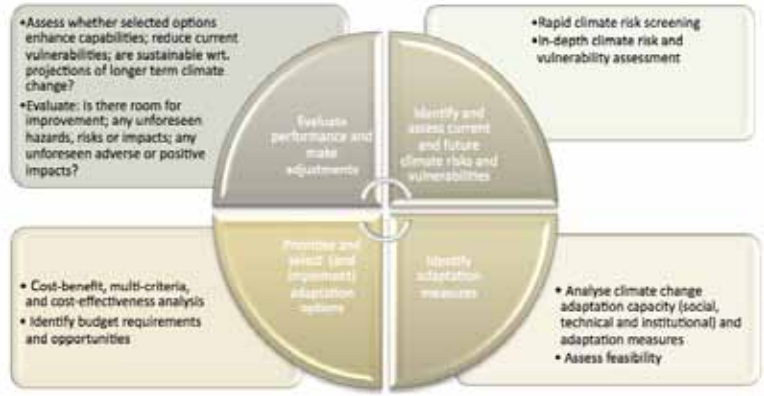


Climate risk screening and assessment tools are designed to assist one or more steps of the adaptation decision making and mainstreaming process depicted in Figure 1 and may target one or more of the decision levels, i.e. national, sectoral, local, an project level. Figure 2 below provides additional detail on the elements that may be covered by the climate risk screening and assessment tools to support each of the adaptation decision making steps.

Climate risk screening and assessment may be conducted for existing (reactive screening) or new (proactive screening) plans, policies and projects and can take place as an integrated or separate effort. We will return to these aspects in Sections 3 and 4 on available tools and their application, but note that to be effective in increasing the climate resiliency of development policies, plans and projects, adaptation decision making should be integrated into the relevant policy, project and local planning and decision making steps.

However, application of climate risk screening and assessment tools as a more generic or separate effort can be an appropriate means of increasing the awareness among key stakeholders and decision-makers on climate related risks and their potential implications for vulnerability and development. As indicated in Figure 1, awareness is a prerequisite for integrating climate change risks and responses into planning and decision-making at all levels, so particularly in cases where the integration of climate change adaptation into development is in very early stages, generic or separate efforts may be an important first step. In addition, the tools may be used to build capacity among key stakeholders for integrating climate change issues.

Figure 2 Climate risk screening and assessment to support climate change adaptation



Considerations regarding the choice of tools

The figures above give an immediate indication of some of the issues that it is relevant to take into consideration when choosing a climate risk screening or assessment tool.

First of all, the context that the tool will be used in should be considered: Will the tool be used at project, local, district, programme, sector, or national level? Will it be applied to existing or new planning, policy or project processes?

Second, what is the purpose of the climate risk screening or assessment? Here it is relevant to consider which of the steps illustrated in Figure 1 above that are most important. Is the main objective of applying the tool awareness raising, identification of adaptation measures, prioritisation of such measures, or the entire process depicted in Figures 1 and 2?

The role and extent of stakeholder involvement in the application of the tool is an additional issue to consider. How important is a participatory approach in the given context? What is the extent of the knowledge and expertise of the stakeholders that will be involved in the screening as well as the people responsible for applying the tool? How much do they know about climate change, risk, and vulnerability issues and the links to poverty and development?

Additional questions to consider when choosing a tool include the following (Willows & Connell, 2003, page 9):

1. **How much will it cost?**

    - Applying certain types of tools, particularly those involving the extensive collection of data or the development of quantitative assessment models, can be costly.
    - Inexpensive off-the-shelf computer packages are available that can facilitate model development
    - However, expert assistance will still be required, particularly in understanding the underlying assumptions of the tools.

2. **How long will it take?**

    - The timescale involved in applying tools can often be longer than decision-makers (and sometimes their analysts) realise. Timescales for decision-making may be much shorter. No matter how useful a tool might potentially be, it is of little use if it cannot meet the decision deadline.
    - The decision-maker will need to judge the risk involved in taking a decision in the absence of the benefits that a more detailed analysis might bring.

3. **To what extent will the analysis improve the decision?**

    - There is little point in undertaking sophisticated analysis, at a potentially high cost, if it adds little to the quality of decision-making. Nevertheless, decision-makers may feel less vulnerable if their decision is based on the best available data and science.

4. **Can appropriate data and information be obtained?**

    - If not, the preceding criteria will need to be reconsidered.

5. **Who will undertake the analysis?**

    - If the use of particular tools requires specialist input, can that input be provided in-house or will it be necessary to seek (and, perhaps, pay for) external advice?

3. Available Climate Risk Screening and Assessment Tools

Climate risk screening and assessment tools provide techniques to assess particular policy, programme and project risks through climate lenses, but may also be used more generically as structuring tools to raise awareness on key linkages between climate change, vulnerability and development. Used in that capacity, they may be applied at all levels of analysis.

Improved understanding and better addressing the present risks related to climate, is intrinsically linked to managing the risks in a future climate. Therefore, climate risk screening efforts should be integrated into relevant economic feasibility analyses and other studies, such as social and environmental assessments. In addition to assessing vulnerabilities and measuring risks, some of the tools include guidance on assessing the costs and benefits of different climate risk management options. Such analyses contribute to advancing and advocating the economic rationale of decision-making under conditions of climate uncertainty. This section presents some of the emerging tools for screening development initiatives for climate-related risks, and may guide the user on the use of them.

Table 1 summarizes key features of the available climate risk screening tools included in this paper. The table illustrates that the tools target different levels, including national, sector, programme, local, and project level, but that the majority of the tools are applicable to more than one level of analysis. For example, CRISP uses the ORCHID climate science impacts as a starting point and adds detail at the programme and sector level.

Most of the tools included in the table and presented in this section are developed for and by international donor agencies and NGO's, and focus on adaptation, climate risk screening and management processes. The screening tools characteristically rely on qualitative information, facilitate stakeholder information, and in most cases they require additional technical inputs from others than the direct users of the tools. Computer-based tools such as CRiSTAL, ADAPT, and Adaptation Wizard primarily build on detailed project or program specific inputs to guide the user towards an identification of climate related risks and potential adaptation options.

An additional distinguishing characteristic between the tools is their level of stakeholder involvement. Certain tools are based on a bottom-up approach, where stakeholders are involved in the identification of hazards, coping strategies, formulation of adaptation needs, evaluation etc. NAPAssess, CRISP, CRiSTAL, CVCA, HEAT, and CEDRA are examples of tools based on a bottom-up approach. Although few tools include stakeholder consultation and direct involvement in all processes, with NAPAssess being an exception, a number of tools include stakeholder involvement in specific phases, such as in vulnerability assessments and for case studies.

In the following, we take a closer look at the various tools available for climate risk screening and assessment at various levels: project and local; programme; sector; and, national level.

Table 1 Overview of available climate risk screening and assessment tools (in alphabetical order)

Climate risk screening tools	Organization/ institution	Target Audience	Approach	Summary	Level	Costing exercise included	Link/References
Assessment and Design for Adaptation to climate change – A Prototype Tool (ADAPT)	World Bank	Policy makers, Development project planners and managers	Software-based approach integrating climate databases and expert assessments	Carries out risk analysis at the planning and design stage, through a five level flag classification and proposes options to minimize risks + guides project designers to appropriate resources. The focus thus far is on agriculture, irrigation and bio-diversity.	Project	No	http://sdwebx.worldbank.org/climateportal/
Adaptation Wizard	UK Climate Impacts Programme	Planners and managers, UK	User-friendly info- and structuring computer-based tool following a risk-based approach	5-step process to assess vulnerability to climate change and identify and options to address key climate risks. Needs to take developing country context into consideration in order to be of real use for developing countries.	Organiza-tion	Yes	www.ukcip.org.uk/index.php?option=com_content&task=view&id=147&Itemid=297
Climate change adaptation through integrated risk assessment (CCAIRR)	Asian Development Bank	Development project planners and managers	Risk- and case study based approach	The approach constitutes of five main components: Capacity assessment and strengthening, review of knowledge data and tools, Rapid Risk Assessment, mainstreaming, and monitoring and evaluation.	Programme	Yes	http://www.adb.org/Documents/Reports/Climate-Proofing/chap8.pdf

Climate risk screening tools	Organization/ institution	Target Audience	Approach	Summary	Level	Costing exercise included	Link/References
Climate change and Environmental Degradation Risk and Adaptation assessment (CEDRA)	Tearfund	Development project planners and managers	Participatory process for multi-stakeholder consultations	The tool assists to prioritize which environmental hazards may pose a risk to existing project locations, and supports the decisions to adapt projects or start new ones.	Project	No	http://tilz.tearfund.org/Topics/Environmental+Sustainability/CEDRA.htm
Climate-FIRST (Climate Framework Integrating Risk screening tool)	Asian Development Bank	Development project planners/ managers	Risk assessment	Climate risks screening software tool for rapid assessment of projects/ programmes risk potential.	Project & programme	N/A	Not yet available
Climate Risk Impacts on Sectors and Programmes (CRISP)	Department for International Deopment (DFID)	Policy makers, project/ programme managers	Sector-based climate risk assessment methodology	Structuring framework developed for the portfolio screening of DFID activities in Kenya. Assesses climate impacts at the sector level.	Programme & sector	Yes	http://www.dewpoint.org.uk/Article.Aspx?ArticleID=901
Climate Proofing for Development	GTZ	Programmes and programme managers	Process-based tool	The tool enables an analysis of policies, projects and programmes and identifies risks and opportunities posed by climate change, and helps to identify measures to tackle these changes.	National, sectoral, project and local.	Yes	http://www2.gtz.de/dokumente/bib/gtz2010-0714en-climate-proofing.pdf http://www.gtz.de/en/themen/umwelt-infrastruktur/umweltpolitik/31288.htm

Climate risk screening tools	Organization/ institution	Target Audience	Approach	Summary	Level	Costing exercise included	Link/References
The Community-based Risk Screening tool - Adaptation and Livelihoods (CRiSTAL)	IUCN, SEI-US, IISD, Intercooperation	Development project planners and managers	Participatory and vulnerability-based approach , step-by-step, computer-based method	User-friendly conceptual framework aimed at raising awareness on climate change adaptation and facilitate the identification and organization of an adaptation strategy.	Project	No	http://www.cristaltool.org/
Climate Vulnerability and Capacity Analysis (CVCA)	CARE	Project managers and field staff, local government and NGOs, and communities	Participatory process for multi-stakeholder analysis.	The methodology provides a framework for analyzing vulnerability and capacity to adapt to climate change at the community level.	Project & programme	No	http://www.careclimatechange.org/index.php?option=com_content&view=article&id=25&Itemid=30
Designing Climate Change Adaptation Initiatives: A Toolkit for Practitioners	UNDP	Professionals at national and sub-national levels, community-based organizations and local communities, NGOs, and development agency staff	Step-by-step structured generic guidance	The toolkit aims to provide support for developing countries to move to low emission climate resilience growth paths while mobilizing financial resources to scale-up good practices with sufficient speed and where most needed.	National, sub-national, local, sectoral	Yes	http://www.undp-adaptation.org/projects/websites/docs/KM/PublicationsResMaterials/UNDP_Adaptation_Toolkit_FINAL_5-28-2010.pdf
Disaster Risk Reduction Tools	ProVention Consortium	Policy makers, project planners/ managers	Disaster risk reduction (DRR) approach	Provides guidance on different DRR mainstreaming tools	Various	Yes, guidance note	http://www.proventionconsortium.org/?pageid=32&projectid=1

Climate risk screening tools	Organization/ institution	Target Audience	Approach	Summary	Level	Costing exercise included	Link/References
Hands-on Energy Adaptation Toolkit (HEAT)	ESMAP	Policymakers, energy stakeholders	Bottom-up, stakeholder-based, qualitative/ semi-quantitative risk-assessment approach	HEAT identifies key direct risks to energy supply and demand and options for adaptation to establish where to focus subsequent in-depth analyses	Sector, project	Yes	http://www.esmap.org/esmap/heat
NAPAssess	Stockholm Environment Institute	Stakeholders to the NAPA process and development practitioners	Participatory, bottom-up and consensus-based approach drawing on multi-criteria analysis for the assessment and prioritizing of adaptation initiatives.	NAPAssess is an interactive decision-support tool designed to facilitate a transparent and participatory NAPA formulation process in Sudan. The use of multi-criteria analysis is also relevant in the context of climate screening	Sector	No	http://www.sei-us.org/napassess/
Opportunities and Risks from Climate Change and Disasters (ORCHID)	Institute of Development Studies (IDS) and Department for International Development (DFID)	Development project planners / managers	Portfolio risk assessment method based on pilot studies	Basic framework including a 4 steps generic approach to portfolio screening for climate risks.	Project	Yes	http://www.ids.ac.uk/go/research-teams/vulnerability-team/research-themes/climate-change/projects/orchid
Screening Matrix	Danida	Development project planners/ managers	Pre-screening of activities	Simple climate change screening matrix or checklist to establish sector programme support sensitivity	Programme & Sector	No	http://www.danidadevforum.um.dk/en/menu/Topics/ClimateChange/ClimateAndDevelopment/ToolsAndReferences/ClimateChangeScreeningNote/

Project and local level tools

Tools developed for screening at the local and project level for climate-related risks, and support users how to address these risks include ADAPT, CRiSTAL, CVCA, ORCHID, CEDRA, HEAT, Climate-FIRST, and Climate Proofing for Development.

ADAPT is mainly targeted at larger investment projects, and provides a simple and quick screening that informs the project developer about the implications from climate change on the specific project and about the extent to which adaptation issues are important in the project design. It also offers guidance on suitable literature and project examples. The tool builds on an easy to use framework with a number of questions to identify the activities which may be sensitive to climate change impacts.

CRiSTAL, on the other hand, targets community level projects. The aim is to assist local communities, and project planners and managers in assessing climate risks to planned and ongoing development projects. Like with ADAPT, CRiSTAL takes the users through a set of questions with a step-by-step approach. The questions here form a systematic basis for improved understanding of the linkages between livelihoods and climate change, and provide the users with information about the project's impacts on local adaptive capacities. Finally, the tool guides project adjustments to improve the effectiveness of the project. The approach offered by CRiSTAL is well-adapted to a participatory process, where stakeholders are involved in identification of hazards, coping strategies, etc., which makes it representative of the conditions in which the projects unfold.

A tool which also addresses vulnerability and adaptive capacity at the local level is the CVCA tool. The tool is designed to build understanding of local impacts and existing adaptive capacities, and identifies community based adaptation initiatives at household, community and national levels. The Climate Proofing for Development tool additionally incorporates issues of climate change into development planning, including at the project and local level, and it recognizes that local people are the main actors in the implementation process related to e.g. adapting agricultural production or improving their own housing.

In line with CRiSTAL, the ORCHID tool emphasizes awareness raising, the learning process of conceptualization of adaptation, and prioritization of

adaptation options, including economic assessments, as intrinsic to this approach. The methodology provides as well a systematic approach to consideration of climate risks in development and implementation of projects and programmes. The target audience for ORCHID is the donor community, including project planners and managers.

HEAT is another tool that can be used for awareness raising, but here the target audience is policymakers. HEAT provides a risk-based process to inform high-level decision-making by governments about how to adapt the energy sector and projects to improve its resilience to climate variability and climate change. It is based around two participatory workshops and related meetings, supplemented with data and information, and are designed to engage energy sector stakeholders in thinking about climate resilience.

Acknowledging the intrinsic linkages between climate change environmental degradation, the tool CEDRA helps project planners and managers working in developing countries to access and understand the science of climate change and environmental degradation and to compare this with local community experience of environmental change.

Climate-FIRST is not developed for development practitioners but is a rapid risk assessment tool that is meant as a user-friendly, desk-top (web- and paper-based) tool that aims to assist project officers in the Asian Development Bank in the project preparation stage. The tool has a context-specific approach to systematically support decision making that integrates climate adaptation and disaster risk reduction measures within development projects. At the project preparation stage, a check-list alerts project officers and mission leaders to potential climate induced impacts and risks to the project, and allows for possible incorporation of risk reduction measures in the planning process.

Programme level tools

Four tools that can be used for screening of climate-related risks at the programme level are included in this paper. These are Climate-FIRST, CVCA, CRISP and the Screening Matrix.

Climate-FIRST is described under project climate risk screening above, but is equally applicable at programme level. It pre-screens and assesses probable climate risk against a number of preconceived impact and risk tables, and risk-related assumptions such as location of project/programme in climate sensitive geo-climatic zones, sector risks, capacity development, and known disaster hot spots.

Besides identification of projects and related strategies to facilitate community-based adaptation to climate change, the knowledge provided through the CVCA process can also be used to integrate adaptation into livelihoods and natural resource management programs.

The CRISP tool links the strategic to the project level, and presents information at a range of scales. The methodology aims to provide different stakeholders with targeted information, supporting programme managers in particular with guidance notes and training. CRISP uses the ORCHID climate science impacts as a starting point and adds detail at the programme and sector level. It assesses the 'impact' of climate on the 'physical environment' and then the 'consequence/risk/opportunity' of that impact on the sector. This approach provides a series of logical steps that could be completed by a non-specialist with sector and country expertise.

The Screening Matrix is an example of a checklist tool and can be applied as the initial step in mainstreaming of climate change into development programmes. The purpose is to provide an overview of potential risks to development programmes and identify opportunities for additional adaptation to climate change for a specific sector programme. The tool provides guidance through a checklist for use by field-mission representatives as well as for development partners to integrate climate change as a crosscutting issue.

Sector level tools

Table 1 includes six climate risk screening tools that are applicable at sector level. These are the Screening Matrix, HEAT, Climate Proofing for Development, Designing Climate Change Adaptation Initiatives, CRISP and NAPAssess.

The Screening Matrix described above is also useful for climate risk screening at a sectoral level. The rapid appraisal carried out for the screening matrix is not an assessment of the climate change risks in the sector per se but rather aims to ensure that development efforts, i.e. the sector programme support or projects, are 'proofed' against losses due to climate change, climate variability and extreme weather events.

Also the sector application of CRISP is equal to what is described above for the CRISP approach at the programme level. The tool is presented as an analysis in a series of spreadsheets that link the different stages together. For example, there is a clear flow from sector level impacts to the implications for different development programmes.

Similarly, HEAT, the Climate Proofing for Development tool, and the toolkit for Designing Climate Change Adaptation Initiatives can be used for sectoral analyses of climate risks. HEAT is designed to lead the users through an assessment of climate vulnerabilities and adaptation options in the energy sector, while both the Climate Proofing for Development and the Designing Climate Change Adaptation Initiatives can be especially targeted for use during the sectoral policy formulation or sectoral planning stages. These tools have specific components focusing on the provision of appropriate information on future climate change and the implications on key sectors

NAPAssess has been specifically designed to provide guidance and a step-by-step reference point for the major activities in a planning process, from synergy assessment, to stakeholder engagement, to project prioritization, to project portfolio development. NAPAssess is also intended to record, store and access output from each of these activities and can be used as a platform for sharing project information with stakeholders, and in turn, for storing information from the stakeholder-driven activities -- participatory vulnerability assessment and scoping of adaptation options. By holding all this information, the tool may be used to conduct multi-criteria assessment in a simple, straightforward way.

National level tools

For application at national level, three tools are available. These are the Climate Proofing for Development tool, Designing Climate Change Adaptation Initiatives, and the NAPAssess.

The Climate Proofing for Development tool can be applied at multiple levels, including the national level. At the national level, use of the Climate Proofing for Development tool will entail different stakeholders, terminology and levels of abstraction in contrast to, for example, the works with communities on land use planning. The tool can contribute to ensure that national development initiative takes systematic account of the challenges and opportunities of climate change.

While the Climate Proofing for Development tool mainly targets the planning stages of national initiatives, the Designing Climate Change Adaptation Initiatives toolkit also offers an opportunity to review, revise and design national and sub-national policies, including accompanying legislative adjustments, to take into account climate change risks and opportunities.

Checklists and other tools

Besides the tools that target the different levels described above, the Adaptation Wizard targets the organizational level and helps organisations to adapt to unavoidable climate changes. This is done through a stepwise approach that assesses vulnerability to current climate and future climate change, identify options to address key climate risks, and help to develop a climate change adaptation strategy.

In addition, the Provention Consortium has developed a series of guidance notes on Disaster Risk Reduction Tools for use by development organisations in adapting programming, project appraisal and evaluation tools and guidelines to support the mainstreaming of disaster risk reduction into development. The guidance notes identify entry points in the planning and provision of development assistance for considering the impact of potential hazards on development and the impact, in turn, of development initiatives on vulnerability to natural hazards.

More generally, many available guidance documents on integration of climate risks and responses in development planning, policies and projects include checklist tools that can be used to raise awareness and structure the processes for identifying risks, etc. Structuring checklists may also be used as an initial step to provide an improved informational basis for selecting climate risk screening and assessment tools. Examples of checklists are provided in Annex C.

4. Examples of Application of Climate Risk Screening and Assessment Tools

This section provides examples of the application of existing screening tools. To date, most studies where a climate risk screening approach has been applied are related to piloting and testing of the tools presented in Section 3. The tools are mainly applied by the organisations or institutions that developed the respective tools and the available information on practical application of screening tools is therefore limited to relatively few case studies besides the piloting efforts. Moreover, most of the available case examples where climate risk screening tools are used are often very scarce on details of how and to which extent the tool is applied. Table 2 in the end of this section illustrates the range of existing case studies, where climate risk screening tools have been used for different purposes. The table is by no means exhaustive, but it can serve as an indication of which tools are used in specific sectors and contexts.

The case studies illustrate that the tools are often used for capacity building efforts of the stakeholders using the tools, in order to raise awareness of climate change and development linkages and to contribute to the knowledge of practical application of the tool. In this way, stakeholders are able to systematically organize relevant information on climate change impacts and adaptation measures.

Planning and strategy

Both the CRiSTAL and ORCHID tools focus on climate risk screening of project level activities and as mentioned there are a number of case experiences available with the application of these tools. At programme and sector level, the CRISP methodology is applied to carry out a climate risk assessment and screening of the DFID Kenya development portfolio. With this objective and based on a preliminary identification of programmes with potential climate issues four programmes were chosen. With the use of CRISP, each of the programmes were analysed with respect to influence of climate change on the programme, risks from climate change on the programme, and adaptation options.

In Sudan, Bhutan, Cambodia, Kenya, and Nepal there have also been efforts to apply a national and sectoral approach to climate risk screening. During the Sudan NAPA process, the effects of climate change on a number of vulnerable sectors vulnerable sectors were considered using the NAPAssess tool. In Bhutan, Cambodia, Kenya, and Nepal, Danida used the Screening Matrix for climate risk screenings of sector programmes focused on environment, natural resources and energy supply.

With the aim of climate proofing whole communities by means of integrating adaptation to climate change into planned and existing infrastructure coastal protection, buildings, roads etc., the CCAIRR tool was applied to six case studies. The case studies demonstrate a risk-based approach to adaptation where the mainstreaming of adaptation was selected in a consultative process involving stakeholders in the Federated States of Micronesia (FSM) and the Cook Islands.

In Albania, a HEAT pilot on vulnerability, risk, and adaptation assessments was undertaken for the energy sector to raise awareness and initiate dialogue on energy sector adaptation. The study concluded that, there are several critical actions which Albania could take immediately—namely, improving meteorological and hydro meteorological monitoring, modeling, and forecasting, and improving energy efficiency, demand-side management, and water-use efficiency.

NAPAssess in the preparation of NAPA in Sudan

In the preparation of its National Adaptation Programme of Action (NAPA), Sudan used the analytical tool NAPAssess to establish country-driven criteria by which to evaluate and prioritize adaptation initiatives, and make consensus-based recommendations for adaptation activities.

A three-day training workshop was held for the Sudan technical committee, task force, and zonal focal point members coordinating prioritization methods and the project portfolio. NAPAssess training was central to the three-day workshop and the NAPAssess software was then distributed to the technical committees and task forces. Members of the Sudan NAPA project unit found NAPAssess particularly useful in guiding the step-by-step approach. The tool was also found useful for project sharing activities between stakeholders and was additionally being used as an organizational tool in each of the iterative stages of the Sudan NAPA process.

The tool was applied to explore adaptation options within agriculture, food security, water resources and human health.

Source: Elgizouli et al. (n. d.)

Agriculture

The Climate Proofing for Development tool was applied in Mali for identifying adaptation options in agriculture. The project identified measures such as promotion of efficient water use, erosion control, diversification, and preparation for pests and diseases in agriculture and livestock.

In Nicaragua, CRiSTAL was tested on an agricultural programme, where the effect of each activity on both the most affected livelihood resources by climate hazards and the most important livelihood resources for local coping strategies, were discussed step by step.

In Uganda, a climate risk screening checklist was developed and applied as part of a CC DARE project implemented by the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) aiming at integrating climate change adaptation into the agricultural sector inputs to the national development plan and sector investment plan. This exercise allowed stakeholders in MAAIF to identify key climate risks, and to specify and review current and future climate impacts and response options (see Annex C for details).

Local development and capacity building

The community-based climate risk screening tool CRiSTAL has been applied in a range activities that are oriented towards local development, where it has been used to assist local communities, project planners and managers in assessing climate risks for ongoing and planned activities. In Ethiopia, CRiSTAL was used in several ways, both with the aim of capacity building for project staff and for application during field studies. During a training workshop project staff was introduced to the concepts of climate change vulnerability and adaptation and ways to integrate this into development projects and planning. Subsequently, project staff used this information to make project adjustments to improve its impact on community resilience to climate change and identify which livelihood resources are most vulnerable to climate hazards, and which resources are important for adaptation.

In Ghana, the CVCA process was used to identify key vulnerability issues in target communities. The analysis, which especially yielded information on particular vulnerability of women, the analysis was used as the basis for development of Community Action Plans which identifies and prioritizes adaptation measures to reduce vulnerability to climate change.

Vulnerability assessment at district level in Tanzania

In Tanzania, the Climate Change Development Project and Pangani River Basin and Management Project supported a climate change vulnerability assessment in Simanjoro district. The CRiSTAL tool was applied for gathering information and analysing the results. At the end of the process the community managed to identify the

climate change adaptation activities which will be undertaken to overcome the impact of climate change. The district council will use the findings to improve the district development plans.

Source: IUCN Tanzania Office (2010)

CVCA and CRiSTAL have been used as part of a CC DARE project in Mozambique to identify vulnerabilities at community level, to understand current coping strategies, as well as to identify key resources and constraints for coping strategies.

In Malawi, CRiSTAL and LOCATE were used to increase the capacity of district assembly members to integrate climate risks and responses into the district development plan. Through the tools, actions needed at village, area and district levels were identified, and as a follow up, the district development plan will be revised to incorporate climate change adaptation issues and measures.

Forest and natural resources

The role of forests and water resources in supporting people's livelihoods and associated farming systems was emphasized in the Climate Change and Development project. The project is implemented in a number of countries, and aims to ensure that climate change related policies and strategies take into account adaptation measures. This is done by providing the knowledge, tools and capacity required to reduce vulnerability and enhance adaptive capacity to climate variability and change at the local, national and regional levels. In Zambia, a short training on CRiSTAL was provided, and the participants went through the CRiSTAL process using data collected during the community consultations. This included screening of agricultural project activities in relation to training of contact farmers in agricultural extension (land preparation, planting, weeding, use of chemical fertilizers and manure), distribution of farming inputs (NPK fertilizers, seeds, cash for labor costs), monitoring of crop development, and lastly training of contact farmers on harvesting techniques and crop storage and marketing.

Water resources

A number of screening efforts have been initiated for water resource management issues. Planning initiatives to develop irrigated agriculture, for example, will need to examine the impact of climate change on water resources and the related risks. Also improved and extended maintenance of drainage system with urban development, and extended flood and drought monitoring is identified during the screening processes as necessary measures to address the climate risks.

Application of the ORCHID tool on Water sector case studies in China

This study tested the ORCHID tool for assessing the effects of climate change on development projects in China. The ORCHID tool is a systematic step-by-step process for assessing climate change impacts and adaptation responses.

Four case studies were included in the study, representing contrasting water sector development projects. One of the case examples is flood control and land drainage management in the Huai River Basin. The main climate sensitive components of this project were found to be the flood defenses and drainage systems. Hence the quantifiable project objective was to upgrade the drainage capacity for the rivulets and depressions from once in less than 3-5 years to once in 5-20 years. The extents to which the project's objectives are threatened by future climate change impacts were estimated using ORCHID and adaptation options to reduce potentially unacceptable impacts were identified. Potential adaptation options were identified as:

- Dredge a network of drainage canals and ponds (to increase the storage capacity of floodwater) and to use the spoil to raise the average land level to reduce water logging;
- Develop improved high level carriers in the floodplain to transfer runoff to the river;
- Enhance the development of flood and drought monitoring, forecasting, warning and operating systems.

Future costs of adaptation at net present value were estimated along with potential benefits of adaptation measures. To finalize the adaptation assessment a 'do nothing additional' approach was evaluated against two potential adaptation options (the combined floodplain drainage improvements and improved forecasting and warning) using eight criteria. Both adaption options scored significantly better than the "No changes currently needed" option using multi criteria analysis.

Source: Tanner et al. (2008)

General observations

Although climate risk screening tools are developed to be applicable to all sectors and programmes, there is a tendency for case examples at sector level to focus on natural resource related issues, including agricultural, water, forest and ecosystem management. There are, however, examples of studies that identify risks for e.g. human health (see e.g. Keller 2009a). Similarly, a few examples of climate risk screening tools applied to infrastructure in the Federal States of Micronesia and Cook Islands are included under Planning and Strategy. Also at Cook Islands, the tourism and pearl industry were identified as being at risk of climate change.

The vulnerabilities to climate change identified and documented through climate risk screenings and assessments demonstrate that already today human, natural and social systems are exposed to a range of climate related stressors. These include tropical storms, heavy rains, strong winds, and droughts, late rain, crops pests, malaria and water-borne diseases. Future global warming will exacerbate existing risks and in many geographical areas, hazards that have been less important in the past, such as floods or droughts will become more prominent.

In many of the climate risk screening and assessment reports, a diverse range of existing household coping strategies are identified. These include measures such as selling assets; reducing consumption; water harvesting and water rationing; crop diversification; migration, and; remittances (Keller 2009a, 2009b; Robledo et al. 2006). Despite the variety of strategies, these are for the most part found to be unsustainable in relation to coping with future climate change, and people are generally found to have low adaptive capacities (Keller 2009a, 2009b). However, existing coping strategies, such as the ones mentioned above can - with relatively simple measures and at moderate costs - be adjusted to future climate change (Halsnæs & Trærup 2009). Examples include expansion of current water storage capacity, adjustments in crop management practices or introduction of more drought resistant crops. Application of climate risk screening and assessment tools can facilitate the identification of sustainable livelihood strategies.

Table 2 Examples of application of climate risk screening tools

Activity/Project	Tool	Organization/ Institution	Objective	Country	Link/reference
Planning and strategy					
An Assessment of Climate Change Vulnerability, Risk, and Adaptation in Albania's Power Sector	HEAT	ESMAP	This pilot assessment demonstrates an approach that can be used to help countries and energy sector stakeholders develop policies and projects that are robust in the face of climatic uncertainties, and assist them in managing existing energy concerns as the climate changes.	Albania	http://www.esmap.org/esmap/sites/esmap.org/files/HEAT%20Toolkit%20Stage%206.1_ESMAPAlbania_Energy_Vulnerability_Adaptation_March%2010%20FINAL%20TO%20IDU.pdf
Climate Change Screening of Danish Development Cooperation with Bhutan	Screening Matrix	Danida	The screening matrix is used to provide an overview of potential risks to a number of sectoral programmes in the respective countries and identify opportunities for additional adaptation to climate change for the programmes.	Bhutan, Cambodia, Kenya, Nepal	http://www.danidadevforum.um.dk/en/menu/Topics/ClimateChange/ClimateAndDevelopment/ToolsAndReferences
Climate Proofing Sapwohn, a Coastal Community in Pohnpei, Federated States of Micronesia	CCAIRR	Asian Development Bank	The study estimated the specific climate risk events and subsequently describes in detail the associated consequence components, as well as the costs and benefits of implementing a number of risk reduction measures (i.e., adaptation).	Pacific Islands (Pohnpei)	http://www.adb.org/Documents/Reports/Climate-Proofing/chap6.pdf
Climate Proofing the National Strategic Development Plans	CCAIRR	Asian Development Bank	The case studies and their findings, provided strong reasons for climate proofing the National Strategic Development Plan	Pacific Islands (Cook Islands)	http://www.adb.org/Documents/Reports/Climate-Proofing/chap6.pdf

Activity/Project	Tool	Organization/ Institution	Objective	Country	Link/reference
Climate Proofing Avatiu-Ruatonga, a community inland from Avatiu Harbor, Cook Islands	CCAIRR	Asian Development Bank	The study estimated the specific climate risk events and subsequently describes in detail the associated consequence components, as well as the costs and benefits of implementing a number of risk reduction measures (i.e., adaptation).	Pacific Islands (Cook Islands)	http://www.adb.org/Documents/Reports/Climate-Proofing/chap6.pdf
Kenya: Climate Screening and Information Exchange	CRISP	DFID	The CRISP methodology was used to carry out a Climate Risk Assessment (CRA) and screening of the DFID Kenya development portfolio	Kenya	http://www.dewpoint.org.uk/Article.Aspx?ArticleID=901
NAPAssess: A Decision Support Tool for Use in the Sudan NAPA Process	NAPAssess	Higher Council for Environment and Natural Resources, Khartoum, Sudan, SEI	Sudan is using "NAPAssess" to establish country-driven criteria by which to evaluate and prioritize adaptation initiatives for its National Adaptation Programme of Action (NAPA)	Sudan	Elgizouli, I., Goubti, N., Fernandes, M. and Dougherty, B. (n. d.) NAPAssess: A Decision Support Tool for Use in the Sudan NAPA Process. Mimeo
ORCHID: piloting a climate risk screening process in Bangladesh	ORCHID	IDS and DFID	The project pilots a methodological process for screening and assessment of adaptation options. Screening of the DFID Bangladesh bilateral aid portfolio for climate risk	Bangladesh	http://www.iiasa.ac.at/Research/RAV/Presentations/orchid_detailed_research_report_2007.pdf
Capacity building					
C3D+ (Capacity Development for Adaptation to Climate Change and GHG Mitigation and Non Annex I Countries)	CRiSTAL	IISD; Environmental Development Action in the Third World (ENDA TM)	The project aims to improve the capacity of local non-governmental organisations and community-based organisations to gather local information on climate change vulnerability and adaptation and integrate this information into project design and management.	Senegal and Zambia	http://www.c3d-unitar.org/?q=node/11

Activity/Project	Tool	Organization/ Institution	Objective	Country	Link/reference
Integrating climate risk management into the Karonga District Development Planning System	CRiSTAL and Local Options for Communities to Adapt and Technologies to Enhance capacity (LOCATE)	Coordination Union for the Rehabilitation of the Environment (CURE) NGO	The tools were used as part of an effort to increase the capacity of the Karonga District Assembly members to integrate climate risks and responses into the district development plan. Through the tools, actions needed at village, area and district levels were identified. Following up on these actions, the Karonga District Development Plan will be revised to incorporate climate change adaptation issues and measures.	Malawi	http://www.ccdare.org
Agriculture					
Climate Change, Vulnerable Communities and Adaptation	CRiSTAL	IISD; IUCN; Intercooperation; SEI	The tool was tested on the Program for sustainable agriculture on the hillsides of Central America (PASOLAC) which aims to help local communities to increase the agricultural productivity through improved soil and water management	Nicaragua	http://www.iisd.org/pdf/2006/security_field_test_nicaragua.pdf
Climate Proofing in Sustainable Land Management Projects	Climate Proofing for Development	GTZ	The project aims to adapt projects and programmes in Sustainable Land Management (SLM) in Mali to Climate Change.	Mali	http://www.conservation-development.net/Projekte/Nachhaltigkeit/CD2/Klima/Links/PDF/10-03-27_Presentation_CP_and_PA.pdf
Local development					
Climate Change, Vulnerable Communities and Adaptation	CRiSTAL	IISD; IUCN; Intercooperation; SEI	The project seeks to promote new income-generating activities in rural households in Dodoma, Tanzania. CRiSTAL was used with participants in this project as part of field studies.	Tanzania	http://www.iisd.org/pdf/2006/security_field_test_tanzania.pdf
Climate Risks and Development Projects	CliDR[1]	Bread for all; Swiss Interchurch Aid	This project focus on climate screening risk to identify peoples vulnerabilities and ways to strengthen adaptive capacity to climate change impacts	Haiti	http://www.cristaltool.org/experiences.aspx
Climate Risks and Development Projects	CliDR	Bread for all; Swiss Interchurch Aid	Project focus is on community-level capacity building and agricultural, forest and natural resource management.	Honduras	http://www.cristaltool.org/experiences.aspx

Activity/Project	Tool	Organization/ Institution	Objective	Country	Link/reference
Climate Risks and Development Projects	CliDR	Bread for all; Swiss Interchurch Aid	The project focused on climate proofing of a community-level rural development project in Ethiopia.	Ethiopia	http://www.cristaltool.org/experiences.aspx
Climate Risks and Development Projects	CliDR	Bread for all; Swiss Interchurch Aid	Analysis of rural development project. The analysed project mainly focuses on strengthening natural resources, and has a beneficial impact on adaptive capacities. This report suggests that natural resources be strengthened further.	Niger	http://www.cristaltool.org/experiences.aspx
Climate-related vulnerability and adaptive-capacity in Ethiopia's Borana and Somali communities	CRiSTAL	CARE; IISD; International IUCN; Save the Children UK	The projects focus is on climate change vulnerability and adaptive capacity among pastoralists. CRiSTAL was used in this project by the research teams to analyze some of the data collected from community consultations.	Ethiopia	http://www.careclimatechange.org/files/reports/Ethiopia_Pastoralists_Report2009.pdf
Community Land Use Responses to Climate Change (CLURCC)	CVCA	CARE	The projects aims to promote the integration of climate change adaptation issues into district plans. Using the CVCA process, key vulnerability issues were identified in target communities, with a particular emphasis on vulnerable groups.	Ghana	http://www.comminit.com/en/node/321503
Sustainable development of the Govuro Coastal Zone in Mozambique	CVCA and CRiSTAL	Centre for Sustainable Development of Coastal Zones, Ministry for the Co-ordination of Environmental Affairs.	Integration of climate change adaptation and disaster risk reduction measures in development planning and local practices is the primary objective of the project. The tools were used to identify vulnerabilities at community level, to understand current coping strategies, the resources important to coping and the constraints to coping.	Mozambique	http://www.ccdare.org
Forest and natural resources					
Climate change and development project	CRiSTAL	IUCN	The project carried out local level vulnerability assessments based on CRiSTAL in four ongoing field sites.	Zambia	http://cmsdata.iucn.org/downloads/climate_change_vulnerability_assessment_zambia.pdf

Activity/Project	Tool	Organization/ Institution	Objective	Country	Link/reference
Climate Change, Vulnerable Communities and Adaptation	CRiSTAL	IISD; IUCN; Intercooperation; SEI	Members of the project used CRiSTAL to develop recommendations on how to adjust project activities so that they take into account their impact on local adaptive capacity.	Mali	http://www.iisd.org/pdf/2006/security_field_test_mali.pdf
PRONA-LCD: Protected Area Management and Nature Conservation, and Desertification Control	Climate Proofing for Development	GTZ	The project supports 4 pilots of national parks, formulation of legal frameworks, and support in decentralization measures. Outcomes and activities of the programme are climate proofed and take actual and future climatic changes into account	Morocco	http://www.conservation-development.net/Projekte/Nachhaltigkeit/CD2/Klima/Links/PDF/10-03-27_Presentation_CP_and_PA.pdf
Protection of Nature Bayanga "Dzanga-Sangha"	Climate Proofing for Development	GTZ	The project contributes to sustainable management of a protected area and conservation of biodiversity.	Central African Republic	http://www.gtz.de/en/praxis/8303.htm
Water resources					
Climate Change Vulnerability Assessment	CRiSTAL	IUCN and CARE	Integrated Water Resources Management project where CRiSTAL was used to assess possible influence from climate change on the project.	Kenya	http://www.cristaltool.org/experiences.aspx
Pangani River Basin Management Project (PRBMP)	CRiSTAL	IUCN	The project focus on Integrated Water Resources Management, including mainstreaming climate change, to support the equitable provision and wise governance of freshwater for livelihoods and environment for current and future generations.	Tanzania	http://www.panganibasin.com/project/index.html
Screening for Climate Change Adaptation in China	ORCHID	Institute of Development Studies (IDS)	Project focus is on improved agricultural water use efficiency considering land use change, water pricing policies and water conservation.	China	http://www.ids.ac.uk/go/idsproject/screening-for-climate-change-adaptation-in-china

Activity/Project	Tool	Organization/ Institution	Objective	Country	Link/reference
Screening for Climate Change Adaptation in China	ORCHID	Institute of Development Studies (IDS)	The project focus is on water conservation and water transfers.	China	http://www.ids.ac.uk/go/idsproject/screening-for-climate-change-adaptation-in-china
Screening for Climate Change Adaptation in China	ORCHID	Institute of Development Studies (IDS)	The project focus is on sustainable water supply and general water management to Beijing municipal.	China	http://www.ids.ac.uk/go/idsproject/screening-for-climate-change-adaptation-in-china
Workshop and application of CRiSTAL in Rio Hondo, Zacapa, Guatemala	CRiSTAL	IUCN	IUCN held a workshop with local NGOs in Rio Hondo, Sierra de las Minas region, Zacapa, Guatemala, which included a brief pilot application of the tool. The focus was on river basin management	Guatemala	http://www.cristaltool.org/experiences.aspx?c=Guatemala
Coastal ecosystems					
Livelihoods and Climate Change	CRiSTAL	IISD; IUCN; Intercooperation; SEI	CRiSTAL was field tested as part of an integrated coastal ecosystem management project in the southwest region of Sri Lanka.	Sri Lanka	http://www.iisd.org/pdf/2006/security_field_test_srilanka.pdf
Infrastructure					
Climate Proofing Infrastructure Projects	CCAIRR	Asian Development Bank	This case study estimated climate-related risks to completion and maintenance of infrastructure development projects.	Pacific Islands (Kosrae and Rarotonga)	http://www.adb.org/Documents/Reports/Climate-Proofing/chap6.pdf

5. Emerging Lessons

The main direct benefit and key rationale for using climate risk screening and assessment tools is the opportunity to strengthen the climate resilience of development efforts and strategies, including projects, programmes and policies. Awareness raising is a pre-requisite for this and the experience so far indicates that use of climate risk screening and assessment tools have contributed significantly to raising awareness among key stakeholders. Awareness raising includes establishing an overview and general assessment of key linkages between the national and sectoral development priorities and climate vulnerability and change. Raising awareness on the linkages and overlaps between development and climate change adaptation, climate risk screening efforts and pilot adaptation projects on the ground is essential to facilitate the identification of opportunities and pave the way for the scaling-up and replication of identified opportunities.

Another, and related, key contribution of the practical application of climate screening tools and guidance so far is capacity building of non-experts on climate change adaptation. Much of the value added from applying different tools appears to be presenting a way of building the capacity of the users of the tools, enabling them to systematically organize climate change adaptation information that is relevant for development activities.

The increasing recognition of the ways in which key development goals are and will be influenced by climate change, of how development paths and activities influence vulnerability and adaptation response options, and hence that adaptation measures should be addressed in the context of general development projects and policies, implies that organisational changes are needed. Viewing adaptation as a cross-sectoral mainstreaming issue places the responsibility of addressing mainstreaming in key line ministries. This diverges from traditional approaches, where climate primarily has been perceived as an environmental and energy issue. It simultaneously calls for a larger re-organisation of responsibilities, which is likely to be stimulated by awareness raising and capacity building emerging through the use of climate risk screening and assessment tools.

One of the key obstacles reported in studies using climate risk screening and assessment tools is limited availability of and access to climate information. Climate risk screening and assessment tools generally rely on information on climate variables in order to determine e.g. return periods for floods and extreme high sea levels. Often, data is limited or unavailable for the specific study site, or records are only available for a short time period. For example, using ORCHID, Tanner et al. (2007), p. 62, note in their climate risk screening process of future impacts on potential flooded area and depth in Bangladesh that "limitations to the analysis include using a simple linear relationship between rainfall and runoff, our own interpolation of this relationship and lack of consideration of temperature changes. A more robust approach would be to use a physically based model (such as GWAVA), however, this was not feasible in this case". Also, information on topography of study area (for flooding due to rain and/or high sea levels) and socioeconomic conditions are necessary to determine level of risks. Lastly, the costs and benefits of potential adaptation measures may be difficult to assess. Currently, there are few practical examples of estimation of costs and benefits of adaptation measures and generally there is limited technical capacity for economic assessments. In addition, only a few of the available climate screening and assessment tools include a costing exercise, amplifying the difficulties.

The overview of climate risk screening tools and examples of their application provided in this paper, illustrate that currently climate screening and assessment tools are mainly applied by the organisations or institutions that developed the respective tools. The number of studies and documentation on the practical application of climate risk screening and assessment tools is still limited and appeals for scaling up existing efforts. A larger volume of case studies and documented experience on the application of climate risk screening and assessment tools is required, before generalized findings and lessons can be made. During the development of this paper, we came across a number of references to the application of different tools – many undertaken by developing country institutions – without further documentation being available. It is thus very likely that the case examples included in this paper only represents the 'tip of the iceberg' and there seems to be a general need for supporting

and encouraging efforts to document and share experiences from the application of climate risk screening and assessment tools.

Up-scaling the use of climate risk screening and assessment tools is likely to be a cost-effective way of increasing awareness and knowledge on key linkages between development and climate change, which is a pre-requisite for advancing the process of increasing the climate resilience of development projects, plans, and policies. However, the case examples in this paper also indicate that so far main results relate to the identification and assessment of current and future climate risks and vulnerabilities and the identification of adaptation options, i.e. the two first steps in the adaptation decision-making process depicted in Figure 1. To a lesser extent, prioritisation exercises have been conducted, but few of these efforts have included cost assessments so far. At present, there is very limited documentation of the extent to which the screening and assessment exercises result in actual implementation of the identified and prioritised adaptation options for the development activity analysed. As the informational basis expands and the momentum for integrating climate change adaptation into projects, plans and policies increases, implementation, monitoring and performance evaluation aspects are gradually receiving more attention. Further guidance and detail on these steps in the climate risk screening and assessment tools along with technical and financial assistance will be important to support widespread implementation and performance evaluation on the ground.

6. References

Elgizouli, I., Goubti, N., Fernandes, M. and Dougherty, B. (n. d.) NAPAssess: A Decision Support Tool for Use in the Sudan NAPA Process. Mimeo

GTZ. (2009). International Workshop on Mainstreaming Adaptation to Climate Change Guidance and Tools,. Berlin: GTZ. GTZ House Berlin, Potsdam Square May 28th - 30th, 2009. Available at http://www.gtz.de/de/dokumente/en-climatemainstreaming-adaptation-workshop-report.pdf.

Halsnæs, K., Trærup, S. (2009). Development and Climate Change: A Mainstreaming Approach for Assessing Economic, Social, and Environmental Impacts of Adaptation Measures. Environmental Management 43(5): 765–778

IISD, WB, & IDS. (2007). Sharing Climate Adaptation Tools: Improving decision-making for development. Geneva: IISD, WB, IDS.

IUCN Tanzania Office (2010) The Climate Change and Development Project (CCDP) Newsletter. March-May 2010 Newsletter Issue Vol. 1

Keller, M (2009a). Climate Risks and Development Projects, Assessment Report for a Community-Level Project in Guduru, Oromiya, Ethiopia. Bread for all, November 2009

Keller, M (2009b). Climate Risks and Development Projects, Assessment Report for Two Community-Level Projects in Southern Honduras. Bread for all, November 2009

Olhoff, A., Schaer, C. (2010). Screening Tools and Guidelines to Support the Mainstreaming of Climate Change Adaptation into Development Assistance – A Stocktaking Report. New York: UNDP.

Robledo, A., Bachmann, F., Rwiza, S., di Philippi, F., Chamgeni , J. (2006). Climate Change, Vulnerable Communities and Adaptation, Report on Tanzania testing.

Tanner, T. M., Hassan, A., Islam, K. M. N., Conway, D., Mechler, R., Ahmed, A. U., Alam, M. (2007) ORCHID: Piloting Climate Risk Screening in DFID Bangladesh. Detailed Research Report. Institute of Development Studies, University of Sussex, UK

Tanner T., Jun X., and Holman I. (2008). Screening for Climate Change Adaptation in China: A process to assess and manage the potential impact of climate change on development projects and programmes in China. Institute of Development Studies, University of Sussex, Brighton, UK

UNFCCC. (2008). Compendium on methods and tools to evaluate the impacts of, and vulnerability and adaptation to, climate change. Bonn: UNFCCC Secretariat.

Willows, R., Connell, R. K. (2003). Climate adaptation: Risk uncertainty and decision-making. UKCIP Technical Report, UK Climate Impacts Programme, Oxford, UK, 162 pp. http://www.sfrpc.com/Climate%20Change/2.pdf

7. Annexes

Annex A. Summary of climate risk screening and assessment tools

Adaptation toolkit - Integrating Adaptation to Climate Change into Secure Livelihoods

Description	This toolkit, developed by Christian Aid, focuses on planning for adaptation and does not include detailed guidance on other issues such as advocacy and monitoring and evaluation. The focus within planning is on developing an analysis of future climate change that can then be integrated into mainstream livelihoods work. The approach in addition emphasises the need to build on: • innovative or new techniques to combine climate science with local knowledge of climate/climate change, • disaster risk reduction tools, such as CVCA • as well as longer-term sustainable livelihoods approaches, such as participatory technology development and community/land use planning,
Objective	The objective of this toolkit is to provide guidance on the adaptation of livelihoods where they currently exist - for in-situ adaptation - generally before the more extreme coping mechanisms emerge. To the extent that environmental migrants transfer their livelihood from a rural to an urban setting, the basic tools described can still apply.
Approach	The approach is to obtain information from two sources of climate expertise, combining what climate science with the community or local knowledge of those most directly affected by these processes
Scope	Project, local level, disaster risk reduction and livelihood adaptation
Target audience	Country Programme and partner staff focusing on disaster risk reduction and livelihood adaptation to climate change.
Key output	The two main outputs are a project-specific analysis of climate change and how this fits into the options available for livelihoods development, and the development of specific national-level climate change documents.
Key input	Historical climate data, seasonal forecasts for the next year, community knowledge of past weather changes, and future scientific climate projections.
Applications	N/A
References	http://unfccc.int/files/adaptation/application/pdf/christianaid_ap_update_sep_09_toolkit_7_sp.pdf http://unfccc.int/files/adaptation/application/pdf/christianaid_ap_update_sep_09_toolkit_6_sp.pdf

The Adaptation Wizard

Description	The Adaptation Wizard developed by the UK Climate Impacts Programme (UKCIP), proposes a simple and generic step-by-step tool, which informs on the need to include climate change adaptation in decision-making processes at organisation/ institution level, based on the UK context. It gives broad-spectrum guidance on: - how to define climate risks - how to assess own vulnerability - when to respond - which possible scenarios exist to react to climate risks - how to cost climate change impacts
Objective	The Adaptation Wizard is an awareness-raising tool which is well-suited for beginners in the adaptation field. It remains very general but also includes more detailed resources as i.e. spreadsheet costing tool, database of adaptation options by region, sector or adaptation activity etc. Besides the Adaptation Wizard may be relevant in a development context as well, as it can serve as inspiration for developing similar computer-based tools and resources adjusted to a developing country setting.
Approach	User-friendly info- and structuring computer-based tool following a risk-based approach
Scope	All regions, all sectors. Mainly takes a UK perspective but applicable internationally
Target audience	Planners and managers, UK
Key output	Identification of preferred adaptation options. Feedback based on monitoring, evaluation, and review from the implementation of these options is an important output, and becomes a key input in the iterative process.
Key input	Decision-makers' objectives, benchmark levels of climate risk, multiple climate and non-climate scenarios and feedback from already implemented adaptations
Applications	Key sector study: http://www.gov.im/dlge/enviro/climatechange.xml rural resource protection strategies: http://publications.environment-agency.gov.uk/epages/eapublications.storefront water: http://www.futuredrought.org.uk/Defra_Home.htm
References	http://www.ukcip.org.uk

Assessment and Design for Adaptation to climate change – A Prototype Tool (ADAPT)

Description	The ADAPT screening tool developed by The World Bank is a software-based multi-sectoral tool for screening development projects for potential sensitive areas to climate change. The tool brings together climate databases and expert assessments on the threats and opportunities arising from climate variability/change and focuses primarily on agriculture, biodiversity, rural infrastructure and coastal zones.
Objective	The objective of the tool is: 1) to raise awareness on the importance/relevance of adaptation to climate change in project planning, 2) to screen existing projects for potential risks related to climate change 3) to provide guidance as how to design alternative options to minimize risks.
Approach	Software-based approach integrating climate databases and expert assessments
Scope	Project, multi-sectoral
Target audience	The tool utilizes project location and activity information
Key output	ADAPT takes the user through a gradual process where: Project location and activities are identified Project activities are screened through a project activity sensitivity matrix based on Global Circulation Modeling (GCM) data. A climate risk assessment is made Project activities are ranked based on a simple flag classification system, which grades projects according to their level of adaptation needs. Results are explained, adaptation options are proposed and expert databases and literature are referred to.
Key input	The tool utilizes project location and activity information
Applications	The ADAPT tool has been tested in South Asia and Sub-Saharan Africa and is recently made broadly accessible.
References	http://sdwebx.worldbank.org/climateportal

Climate change adaptation through integrated risk assessment (CCAIRR)

Description	In the preparation of six "climate proofing" case studies conducted in the pacific islands region, the Asian Development Bank (ADB) proposes a "climate change adaptation through integrated risk assessment" approach (CCAIRR), which by definition is a risk-based approach to adaptation. The approach constitutes of five main components: Capacity assessment and strengthening, review of knowledge data and tools, Rapid Risk Assessment, mainstreaming, and monitoring and evaluation. Each of these components introduces methods to take into consideration when addressing climate adaptation, as for example cost-benefit analysis for evaluating adaptation, climate modeling tools etc.
Objective	In general, the ADB case studies propose relevant guidelines and touch upon inherent issues of sustainable development, such as for example the role capacity building, partnerships, institution strengthening etc.
Approach	Risk- and case study based approach
Scope	Programme
Target audience	Development project planners and managers
Key output	Guidance on mainstreaming adaptation into development programmes
Key input	Climate data, including scenarios, maps (current and historical), aerial photographs (current and historical); satellite imagery (current and historical), descriptions (written, oral) of adverse weather and climate events affecting the study areas in the past, inventories of land and marine resources, socio-economic data (health, income, expenditure etc.), information on infrastructure.
Applications	Pacific islands region http://www.adb.org/Documents/Reports/Climate-Proofing/chap6.pdf
References	http://www.adb.org/Documents/Reports/Climate-Proofing/chap8.pdf

Climate change and Environmental Degradation Risk and Adaptation assessment (CEDRA)

Description	CEDRA is a tool provided by Tearfund, and is a strategic-level environmental field tool for agencies working in developing countries. Using CEDRA, civil society organisations can prioritize which environmental hazards may pose a risk to their existing project locations, enabling them to make decisions to adapt projects or start new ones. Adaption options are discussed, and decision-making tools are provided to help organisations make their projects resilient. In addition, policy makers may find CEDRA useful as a resource for helping grass-roots organisations' to understand projected climate change and environmental degradation impacts and respond to them.
Objective	The tool helps users to access and understand the science of climate change and environmental degradation and ensure their full portfolio of projects is resilient.
Approach	Participatory process for multi-stakeholder consultations
Scope	*Project*
Target audience	*Development project planners and managers. Agencies working in Disaster Risk Reduction (DRR) or general development will find CEDRA useful.*
Key output	Response plan to the hazards identified.
Key input	scientific climate information, community knowledge
Applications	N/A
References	*http://tilz.tearfund.org/Topics/Environmental+Sustainability/CEDRA.htm*

Climate Proofing for Development

Description	GTZ has developed this tool called 'Climate Proofing for Development'. Based on a methodology that is used when planning German development cooperation projects, the tool has been tailored to advisory settings. It enables the analysis of policies, projects and programmes in partner countries with regard to the risks and opportunities that climate change poses, and helps to identify measures to tackle these changes. The tool has a flexible approach that can be adapted to different contexts and used on many levels. The methodology consists of four steps from risk screening to integration of adaptation measures into project design.
Objective	To support the integration of adaptation perspectives into development work on the ground. Options for action and practical integration of climate aspects are developed and prioritized.
Approach	Process-based tool that can be adapted to the specific context in which it is applied. The process includes involvement of local stakeholders and decision-makers.
Scope	*National, sectoral, project and local.*
Target audience	Originally developed and tested for GTZ programmes and programmes
Key output	Identification and prioritization of measures of adaptation
Key input	Climate trends and projections
Applications	http://www.conservation-development.net/Projekte/Nachhaltigkeit/CD2/Klima/Links/PDF/10-03-27_Presentation_CP_and_PA.pdf
References	*http://www2.gtz.de/dokumente/bib/gtz2010-0714en-climate-proofing.pdf* *http://www.gtz.de/en/themen/umwelt-infrastruktur/umweltpolitik/31288.htm*

Climate Risk Impacts on Sectors and Programmes (CRISP)

Description	The CRISP methodology links the strategic to the project level, presenting information at a range of scales. It also aims to provide different stakeholders with targeted information, supporting DFID programme managers in particular with guidance notes and training. The CRISP methodology was developed to carry out a Climate Risk Assessment (CRA) and screening of the DFID Kenya development portfolio. CRISP uses the climate science impacts as a starting point. It assesses the 'impact' of climate on the 'physical environment' and then the 'consequence/ risk/opportunity' of that impact on each sector of the economy. The sectoral impacts are subsequently used as reference to determine the specific climate risks to those programmes that are found to be potentially most at risk. The methodology also lists adaptation options for each sector and programme.
Objective	To improve the understanding of risks and opportunities of climate change in relation to DFID Kenya development portfolio
Approach	Sector-based climate risk assessment methodology
Scope	*Programme & sector*
Target audience	*Policy makers, project/programme managers*
Key output	Identification of specific climate risks to programmes, identification and prioritization of adaptation options.
Key input	Historical and projected future climate data
Applications	http://www.dewpoint.org.uk/Asset%20Library/DFID/Climate%20Risk%20Assessment%20Report%20-%20Kenya.pdf
References	http://www.dewpoint.org.uk/Article.Aspx?ArticleID=901

Climate Vulnerability and Capacity Analysis (CVCA)

Description	The CVCA methodology developed by CARE provides a framework for analyzing vulnerability and capacity to adapt to climate change at the community level. The methodology helps to understand the implications of climate change for the lives and livelihoods of poor people. By combining local knowledge with scientific data, the process builds people's understanding about climate risks and adaptation strategies. It provides a framework for dialogue within communities, as well as between communities and other stakeholders. The results provide a solid foundation for the identification of practical strategies to facilitate community-based adaptation to climate change.
Objective	The twofold objectives of the framework are to analyze vulnerability to climate change and adaptive capacity at the community level, and to combine community knowledge and scientific data to yield greater understanding about local impacts of climate change
Approach	Participatory process for multi-stakeholder analysis.
Scope	Local community. Integration of climate change adaptation issues into livelihoods and natural resource management programs.
Target audience	*Project managers and field staff, local government and NGOs, and communities*
Key output	Context-specific information about the impacts of climate change and local vulnerability.
Key input	Information gained at different levels trough collection of data/interviews/ discussions. Secondary information on scientific information on climate change.
Applications	http://www.comminit.com/en/node/321503
References	*http://www.careclimatechange.org/index.php?option=com_content&view=article&id=25&Itemid=30*

Community-based Risk Screening Tool (CRiSTAL)

Description	The tool proposes a conceptual framework, which -through excel sheets - takes the user through the process of understanding the specific context of a given project, in terms of climate change context, current climate risks, livelihood resources, coping strategies etc. Based on the acquired knowledge the user is then assisted to anticipate needed modifications of the project. The tool is well-adapted to a participatory process, where project stakeholders are involved in the identification of hazards, coping strategies etc., which makes it representative of the complex reality in which projects unfold. This is evidently even more the case in regions/countries where reliable information/ data is scarce and/or unreliable. CRiSTAL provides a framework to establish community-level baseline with regards to coping mechanisms and vulnerability. It explains the main concepts, provides examples and refers to relevant resources, but does not comprise climate-modeling or other context-specific data, as all information is fed into the tool directly by the user. In this sense, the tool is generic and the users need to have in-depth context- and sector specific knowledge. By approaching climate screening of projects in a user-friendly, systematic and pragmatic manner, CRiSTAL serves both as an awareness raising and structuring tool for project planners and managers, who do not necessarily have specialized knowledge on climate related issues per se.
Objective	Integrate risk reduction and climate change adaptation into community-level projects
Approach	Participatory and vulnerability-based approach , step-by-step, computer-based method
Scope	Local communities, project planners and project managers
Target audience	*Development project planners and managers*
Key output	List of project activities that protect/enhance access to and availability of resources that are strongly affected by climate hazards or important to coping.
Key input	Relevant (regional, national, eco-zone) information on climate change (if available/accessible), as well as information on local climate hazards, impacts, coping strategies, as well as livelihood resources, and project information.
Applications	http://www.cristaltool.org/experiences.aspx
References	*http://www.cristaltool.org*

Designing Climate Change Adaptation Initiatives: A Toolkit for Practitioners

Description	This Toolkit developed by UNDP is being one of the first hands-on guides assisting developing countries to move to low emission climate resilience growth paths while mobilizing financial resources to scale-up good practices with sufficient speed and where most needed. The toolkit is a step-by-step guide on how to develop adaptation initiatives in developing countries. The guide helps to understand how to differentiate between a climate change "adaptation" and a traditional development initiative, and what key elements must be considered when developing and designing an adaptation initiative. It sets out the fundamental components of the design process, the approach to building stakeholder consensus, and key tools and methodologies. It is presented as an organic document and will be systematically and continuously updated on a bi-annual basis.
Objective	The toolkit has two main objectives. 1) Improving adaptive capacity and/or reducing vulnerability of human populations and natural and economic systems on which they depend to climate change and its impacts. 2) Establish/strengthen national/sub national/local systems to support process of adaptation in a continuous and sustainable way to moderate potential damages, take advantage of opportunities, or manage long -term consequences
Approach	Step-by-step structured generic guidance
Scope	*National, sub-national, local, sectoral*
Target audience	Professionals at the national and sub-national levels such as central, regional, and local government staff, community-based organisations and local communities, non-governmental organisations, and development agency staff
Key output	Enhance technical ability of people, Strengthen capacities (mandate and finances) of institutions, incorporate climate change risks into various levels of decision-making and different sectors of the economy and to promote and disseminate knowledge and learning from implemented adaptation initiatives.
Key input	Stakeholder consultations, secondary resources on climate change impacts on key sectors and regions within the country
Applications	N/A
References	*http://www.undp-adaptation.org/projects/websites/docs/KM/PublicationsResMaterials/UNDP_Adaptation_Toolkit_FINAL_5-28-2010.pdf*

Hands-on Energy Adaptation Toolkit (HEAT)

Description	ESMAP has developed HEAT which can help countries and energy sector stakeholders develop policies and projects that are robust in the face of climatic uncertainties, and assist them in managing existing energy concerns as the climate changes. HEAT identifies key direct risks to energy supply and demand and options for adaptation to establish where to focus subsequent in-depth analyses. It also identifies additional research needed to better understand the implications of extreme climatic events for the energy sector as well as potential indirect impacts—such as possible adaptation actions in the agriculture sector that may affect energy supply
Objective	HEAT aims to lead users through as assessment of climate vulnerabilities and adaptation options in the energy sector of your country. The tool contributes to help raise awareness among key stakeholders and initiate dialogue on energy sector adaptation.
Approach	Bottom-up, stakeholder-based, qualitative/semi-quantitative risk-assessment approach
Scope	*Energy sector policies, projects*
Target audience	Energy sector stakeholders
Key output	There are three main outputs: 1) a greater awareness and deeper understanding among stakeholders, 2) High-level (semi-quantitative) assessments of key risks and adaptation options for the energy sector, and 3) clarity on where subsequent more in-depth analyses should be focused.
Key input	Participatory workshops and related meetings
Applications	http://www.esmap.org/esmap/sites/esmap.org/files/HEAT%20Toolkit%20Stage%206.1_ESMAPAlbania_Energy_Vulnerability_Adaptation_March%2010%20FINAL%20TO%20IDU.pdf
References	*http://www.esmap.org/esmap/heat*

NAPAssess

Description	The "NAPAssess" interactive analytical tool is a decision-support instrument developed by the Stockholm Environment Institute in the context of the Sudan NAPA process. Its main objective is to facilitate a stakeholder-driven and transparent NAPA formulation process, in the assessment and prioritization of adaptation initiatives. The model guides the user through a multi-criteria analysis composed of seven modules (vulnerability, stakeholder, initiatives, criteria, weighting, ranking and help/reports) where the content of each module is determined through stakeholder consultation inputs. A participatory and consensus-based approach - where stakeholders voice their own definition and appraisal of key vulnerabilities, possible initiatives, criteria for prioritizing adaptation activities etc. – is, although rather resource intensive, highly relevant in the context of climate screening exercises of development projects and programs.
Objective	The NAPAssess' objectives are to establish country-driven criteria by which to evaluate and prioritize adaptation initiatives, and make consensus-based recommendations for adaptation activities.
Approach	Participatory, bottom-up and consensus-based step-by-step approach drawing on multi-criteria analysis for the assessment and prioritizing of adaptation initiatives.
Scope	*National/ sector*
Target audience	*Stakeholders to the NAPA process and development practitioners*
Key output	Identification of the highest priority list of climate change adaptation programs, projects, and policies.
Key input	Stakeholder consultations, secondary information on national circumstances.
Applications	http://www.sei-us.org/napassess/
References	*http://www.sei-us.org/napassess/*

Opportunities and Risks from Climate Change and Disasters (ORCHID)

Description	The ORCHID process- and risk-based methodology was developed by the Institute of Development Studies (IDS) with the aim to enable a more systematic consideration of climate risks in development in the design and implementation of development projects and programs. The approach brings together concerns related to disaster risk reduction and adaptation to future climate change and was developed for project portfolio screening in India and Bangladesh and has also been tested in China. The target audience is the donor community, project planners and managers.
Objective	The main objective of ORCHID is to raise awareness of climate risks for program personnel and for them to acquire an initial understanding of the program's portfolio in terms of the risks posed by climate change in the design, planning and implementation process.
Approach	Raising awareness and conceptualizing adaptation as a learning process is intrinsic to the approach. The prioritization of adaptation options, which includes an economic analysis of adaptation possibilities, is also a central element.
Scope	Project
Target audience	Development project planners / managers
Key output	ORCHID can be considered as a first step to portfolio climate screening and provides a framework and initial recommendations to guide this exercise and advise how programs may enhance risk management. Consequently, ORCHID provides a basic framework to structure the screening process, which remains generic and serves as a point of departure for more in-depth analysis. Cost benefit analysis and sector economic assessment are undertaken for areas where clear adaptation options can be discerned and where sufficient data is available.
Key input	The process utilizes quantitative inputs from climate science which are applied to the risk assessment of programmes usually at wide scales, and using directional trends rather than discrete figures. The tool utilizes project documents and interviews with project staff as well as past trend in vulnerability and disaster risk
Applications	http://www.ids.ac.uk/go/idsproject/screening-for-climate-change-adaptation-in-china
References	*www.ids.ac.uk/climatechange*

Annex B. Links to other resources

The Adaptation Learning Mechanism is a collaborative knowledge-sharing platform with a wide range of resources including country profiles, case studies and lessons learned. http://www.adaptationlearning.net/

WeADAPT is an online platform that offers a range of innovative tools to help users access, share and synthesize knowledge on adaptation. http://www.weadapt.org/

The Linking Climate Adaptation Network is an online community of practitioners and researchers on climate change adaptation: http://community.eldis.org/.599266eb/

The Nairobi Work Programme on impacts, vulnerability and adaptation to climate change has developed a compendium on methods and tools as well as an adaptation practices interface: http://unfccc.int/adaptation/sbsta_agenda_item_adaptation/items/3633.php

The International Institute for Sustainable Development (IISD) has helpful tools and policy analysis on climate change: http://www.iisd.org/climate/vulnerability/

The Institute of Development Studies (IDS) website includes useful briefs and analysis on climate change adaptation issues: http://www.ids.ac.uk/go/browse-by-subject/climate-change

International Institute for Environment and Development (IIED) generates commentary and analysis on climate change: http://www.iied.org/CC/index.html

The Red Cross/Red Crescent Climate Centre has produced a useful guide for helping communities to prepare for climate change: http://www.climatecentre.org/index.php?page=news_ext&pub_id=85&type=4&view=more

Practical Action website – click on the left-hand menus, on 'Technical enquiries' then 'Adaptation to Climate Change' for some examples of adaptation options on the website: http://practicalaction.org/

In this UNFCCC report, background information on climate change and why adaptation is needed in developing countries is provided: http://unfccc.int/files/essential_background/background_publications_htmlpdf/application/txt/pub_07_impacts.pdf

The UNISDR Terminology aims to promote common understanding and common usage of disaster risk reduction concepts and to assist the disaster risk reduction efforts of authorities, practitioners and the public: www.unisdr.org/eng/library/UNISDR-terminology-2009-eng.pdf

The UN Development Group (UNDG) has developed Guidance Notes on integration of climate change considerations, on disaster risk reduction, and on environmental sustainability. All guidance notes primarily target UN staff and the UNDAF process, but the approaches and tools included in them have broader potential application: www.undg.org

Examples of checklist tools that can be used, inter alia, to raise awareness and structure the climate risk management process, can be found at for example http://tilz.tearfund.org/Topics/Environmental+Sustainability/CEDRA.htm for the CEDRA tool; in Willows and Connell (2003), http://www.sfrpc.com/Climate%20Change/2.pdf, for UKCIP, and; at http://www.undg.org/docs/11473/UNDG-GuidanceNote_ClimateChange-July2011.pdf for the UNDG Guidance Note on climate change.